

Two new species of Chloropidae (Diptera) from Switzerland

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Two new species of Chloropidae (Diptera) from Switzerland. - The two species *Siphunculina ismayi* sp. n. and *Speccafrons genavensis* sp. n. (Diptera, Chloropidae, Oscinellinae) are described, illustrated and compared with morphologically similar species. Short keys are provided for the two genera for the species of the Western Palearctic Region.

Keywords: Diptera - Chloropidae - *Siphunculina* - *Speccafrons* - new species - Switzerland.

INTRODUCTION

Although Switzerland is located in the middle of Europe, which is the best studied biogeographical area for Diptera of the World, there are still numerous families insufficiently known. This is basically the result of the inadequate collecting effort devoted to "small black flies and mosquitoes" in this country. On the other hand, its fauna is quite diverse because of its central position in Europe with the influence of the fauna of the Mediterranean (in southern Switzerland), Western Europe (in northern Switzerland), Eastern Europe (in the alpine valleys, like the Wallis or the lower Engadine valley), and even some boreal elements have been found in cool and humid places in the Jura mountains and the Alps. It is not surprising that since the publication of the first checklist of the Diptera of Switzerland with 6088 species (Merz *et al.*, 1998) over 650 species were added in the two supplements published since then (Merz *et al.*, 2002, 2007) and over 80 species have been found since then (Merz, unpublished).

A good example of a poorly studied family is the Chloropidae, the grass-flies. They are one of the larger families of Diptera of the World with over 2000 species described, but several times this number is still awaiting naming (Ismay & Nartshuk, 2000). Usually the species are small (wing length less than 3 mm, with the notable exception of genera like *Lipara* or *Platycephala* whose wings are longer than 6 mm), often black, striped yellow and black, or dull grey with unspotted, hyaline wings. The differences between the species in some genera are small (e.g., *Oscinella*, *Meromyza*, *Chlorops*), often needing examination of the genitalia. Another reason for the lack of interest is the fact that they can be sometimes extremely abundant. It is not unusual to pick out over 100 specimens from an insect net after sweeping once through the vegetation, however most specimens of such a sample usually belong to one or two species only. This makes work at the microscope time-consuming (sorting, pinning, labelling,

identifying, etc.) and not attractive for taxonomists. Applied entomologists usually do not have the time to deal with such large numbers of specimens needing many hours of work for an accurate identification. It is understandable that their taxonomy and nomenclature are far from being well known, although some European species are of considerable economic importance in agriculture (*Oscinella frit* (Linné) or *Chlorops pumilionis* (Bjerkander) and some others).

A comprehensive examination of the literature records and the study of most specimens collected in Switzerland up to about 1990 by Dely-Draskovits *et al.* (1993) revealed 113 species for this country. Based on the examination of further material the Swiss Checklist included 136 species (Dely-Draskovits, 1998). Several thousand additional specimens were studied since then, and Merz *et al.* (2005, 2007) added a further 27 species to the list. Currently, 163 species are recorded from Switzerland. Compared with the diversity in Europe (394 species, see Nartshuk, 2007) and the fauna of neighbouring countries it can be expected that over 200 species may eventually be recorded from Switzerland.

Much needs to be discovered about the biology of the species. Most species in Europe are phytophagous with the larvae feeding principally in shoots of Poaceae, but also in some other plants. The species which are considered to be economically damaging to humans belong to this group, as well as species of *Lipara* which induce conspicuous galls on reed (*Phragmites australis*). Some species, however, are saprophagous (in dung, excrement, decaying vegetation, on dead animals), they are predators of egg masses of grasshoppers and spiders, or they feed on small, soft insects. For instance, the larvae of the most abundant species *Thaumatomyia notata* (Meigen) are predators of scale insects (Sternorrhyncha, Coccoidea) and root aphids (Sternorrhyncha, Aphididea). Few species develop in birds' nests or in fungi.

Geneva is a small canton of 282 km², representing thus 0.7% of the surface of Switzerland. The canton is rather flat, ranging from 350–515 m.a.s.l., and highly populated with over 400,000 inhabitants (about 1,485 inhabitants/km²). It is not surprising that its environment is strongly influenced by human activities (agriculture, habitations, management of forests) and the biologically rich habitat is rather restricted (Greppin *et al.*, 2007). Nevertheless, its biogeographical position at the lower end of the Lake of Geneva along the River Rhône is remarkable with its small, but notable, influence of submediterranean elements. The Chloropidae have not yet been studied in detail and the old collection of the Natural History Museum houses less than 100 specimens. The author, however, is collecting them regularly, and some excursions were devoted entirely to these flies. Therefore, several thousand specimens were collected since 1999, and many of them have been named in the meantime. So far, just 100 species are known from Geneva (Merz, in preparation), although specimens of some difficult genera are not yet identified (*Meromyza* spp. and most *Oscinella* spp. and *Chlorops* spp.). In addition, a small, but very interesting sample was collected on a window on a veranda in a garden. The study of this material led to the discovery of at least two very distinctive, unmistakable species of the subfamily Oscinellinae which are new to science. This unexpected result shows that the biological diversity of this small canton is remarkably high although many formerly rich areas were destroyed by human activities. Despite the comparatively good knowledge of the family in Central

Europe there are still some unexpected species to be discovered, and there is an urgent need to investigate the potentially rich areas carefully.

This paper presents these two species new to science with detailed descriptions and illustrations and compares them with morphologically related species. One of them is currently only known from the canton Geneva, the other species from one locality in Geneva and from a second locality in southern Switzerland. A key to the Western Palaearctic species of the two genera concerned is provided which should allow easy recognition.

MATERIAL AND METHODS

The material studied is deposited in the entomological collection of the Natural History Museum Geneva (= Muséum d'histoire naturelle Genève, MHNG). The specimens were either swept from vegetation with an insect net (diameter 40 cm) or they were collected at the window of a terrace in a garden which was treated with a contact insecticide. For the new species the locality data is cited verbatim and arranged alphabetically. Morphological terms in the descriptions follow Merz & Haenni (2000) except the antennae for which the interpretation of Stuckenberg (1999) is adopted.

SYSTEMATIC PART

Siphunculina Rondani, 1856: 128.

TYPE SPECIES: *Siphunculina brevinervis* Rondani, 1856 (= *Siphonella aenea* Macquart, 1835) (original designation).

In this genus 33 species have been described so far. Most of them are known in the Oriental Region (Kanmyia, 1983, 1989, 1994). Only eight species occur in the Palaearctic Region, six of which have been recorded in the Western Palaearctic Region (Nartshuk, 2005, 2007). Little is known about their biology. According to Ferrar (1987) and Ismay & Nartshuk (2000) the larvae may be found in birds' nests (*S. nidicola*), in excrement (*S. aenea*, *S. ornatifrons*, *S. striolata*) or in dead animals. Kanmyia (1983) wrote: "The larvae may be scavengers or scatophagous.". One species of the Oriental Region, *S. funicola* (de Meijere), is a vector of eye disease and therefore of medical importance.

Siphunculina ismayi sp. n.

Figs 1-9 and Plate A1-4

MATERIAL STUDIED: Holotype ♂: "Helv., GR, 330 m, Grono (Moesa), 31.VIII.2006 / 5, leg. B. Merz" (MHNG). – Paratypes: 1 ♀, "CH: GE, Corsier-Port, Vitre véranda, 1.-31.VI.2006, C. Besuchet" (MHNG) – 7 ♀, same data as before, but 1.-31.VII.2006 (MHNG). – 2 ♂, 3 ♀, same data as holotype (MHNG). – 1 ♂, "Helv., GR, 350 m, Grono (Dorf), 31.VIII.2006 / 4, leg. B. Merz" (MHNG). The holotype is double mounted and pinned on a minuten pin on a block of plastozone. It is in excellent condition.

ETYMOLOGY: The species is named in honour of John W. and Barbara Ismay, specialists of the family Chloropidae.

DIAGNOSIS: Typical species of *Siphunculina* Rondani with its short vein R2+3 reaching the Costa about at level of DM-Cu crossvein (Fig. 4) and with the face anteroventrally slightly projecting anteriorly to the eye (Fig. 1). It differs from its

congeners in the Palaearctic Region by the following combination of characters: Ocellar triangle not reaching anterior margin of frons (Fig. 2), the latter uniformly matt grey microtrichose, leaving only three small shining black spots laterally and anteriorly of ocelli; mesonotum and scutellum (Fig. 3, Plate A4) densely dull grey microtrichose, covered with whitish, stubby, lanceolate setulae. Male terminalia in lateral view with the surstylus pointed apically (Fig. 5).

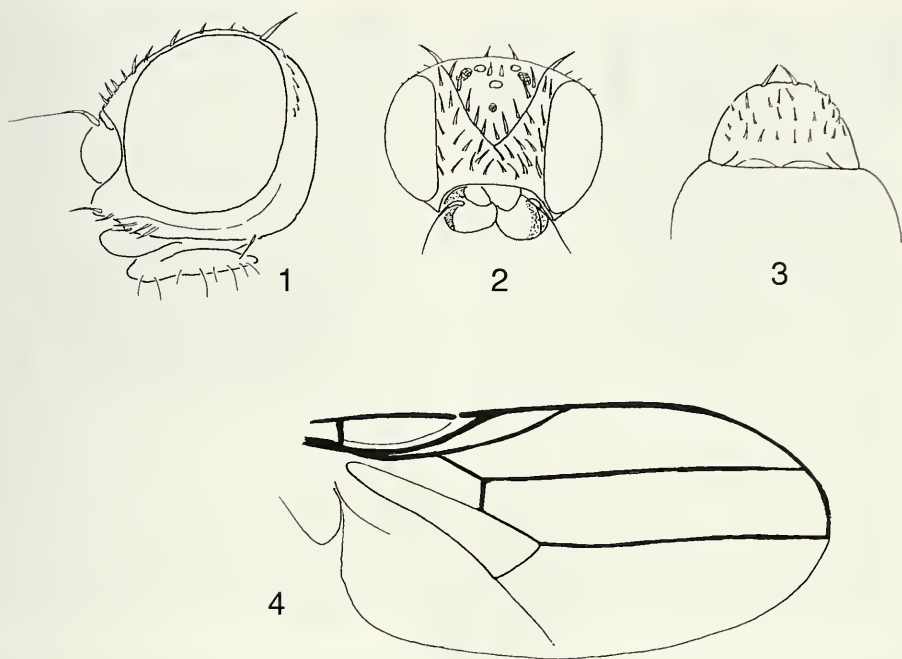
DESCRIPTION

Wing length: Male (n=4) 1.0-1.4 mm (holotype 1.02 mm); female (n=3) 1.25-1.35 mm.

Colouration: Head dull black, densely grey microtrichose, but ventral half of gena above oral cavity, ventralmost part of occiput and labellae shining; ocellar triangle grey microtrichose with 3 small shining black spots laterally of ocelli and just anterior of anterior ocellus; palpus, dorsalmost part of facial keel, pedicellus, ventral half of postpedicel and base of arista yellow brown. Thorax black, mesonotum, scutellum and dorsal half of pleura microtrichose, dull; ventral half of pleura shining. Legs black, but anterior trochanter, all knees, apical quarter of tibiae and tarsi yellow brown. Halter with yellow brown stem and black knob. Abdomen black, tergites thinly microtrichose, subshining.

Head (Figs 1-2, plate A1-3): In profile about as long as high; gena less than one quarter as high as eye, distinctly narrower than width of postpedicel; vibrissal angle projecting anterior to eye; compound eye almost spherical, only little higher than long, bare; frons almost square, about twice as wide as one eye, eye margins parallel; ocellar triangle about three quarters as long as frons, apex not sharply separated from interfrontal plate; lunule rather horizontal; face with deep antennal grooves and a high facial keel which is wide dorsally and contracted in middle; antenna with minute scape and small pedicel; postpedicel about one fifth higher than long, roundish, conspicuous, covered with short, white setulae; arista very shortly pubescent, about one quarter longer than antenna; mouthparts not projecting, palpus and labellae reaching anterior margin of oral cavity; labellae geniculate. Chaetotaxy: all setae and setulae white, lanceolate, rather thick and stubby; frons with a row of 4-6 reclinate fronto-orbital setae and numerous inclinate setae on interfrontal plate; slightly inside margin of ocellar triangle with about 6 conspicuous inclinate setae; ocellar seta shorter than fronto-orbital setae, upright; postocellar seta inclinate; lateral vertical seta eclinate; vibrissa distinct but short.

Thorax (Fig. 3, plate A4): Mesonotum covered with numerous conspicuous white, lanceolate, stubby, thick setulae which are arranged in 6-10 irregular and poorly delimited rows; postpronotum and dorsum of scutellum with similar white, thick, lanceolate setulae; notopleuron more or less bare; scutellum about two thirds as long as wide at base; pleura black shining, but posterodorsal half of anepisternum, anepimeron, anatergite, katatergite, meron and medial part of katepisternum dull, microtrichose; anepisternum bare; postscutellum shining. Chaetotaxy: setae lanceolate, white, thick, only little longer than setulae; no distinct postpronotal seta; 1+1 notopleural setae (in one specimen 2 anterior notopleural setae); 1 dorsocentral seta close to scutellum; 1 supra-alar seta; 1 (pair of) apical scutellar seta inserted on small tubercle, shorter than



FIGS 1-4

Siphunculina ismayi sp. n. male holotype. (1) Head, lateral view. (2) Head, dorsal view. (3) Scutellum, dorsal view (drawn in situ). (4) Wing (drawn in situ).

half the length of the scutellum, separated from each other by the length of one seta; basal scutellar seta not developed.

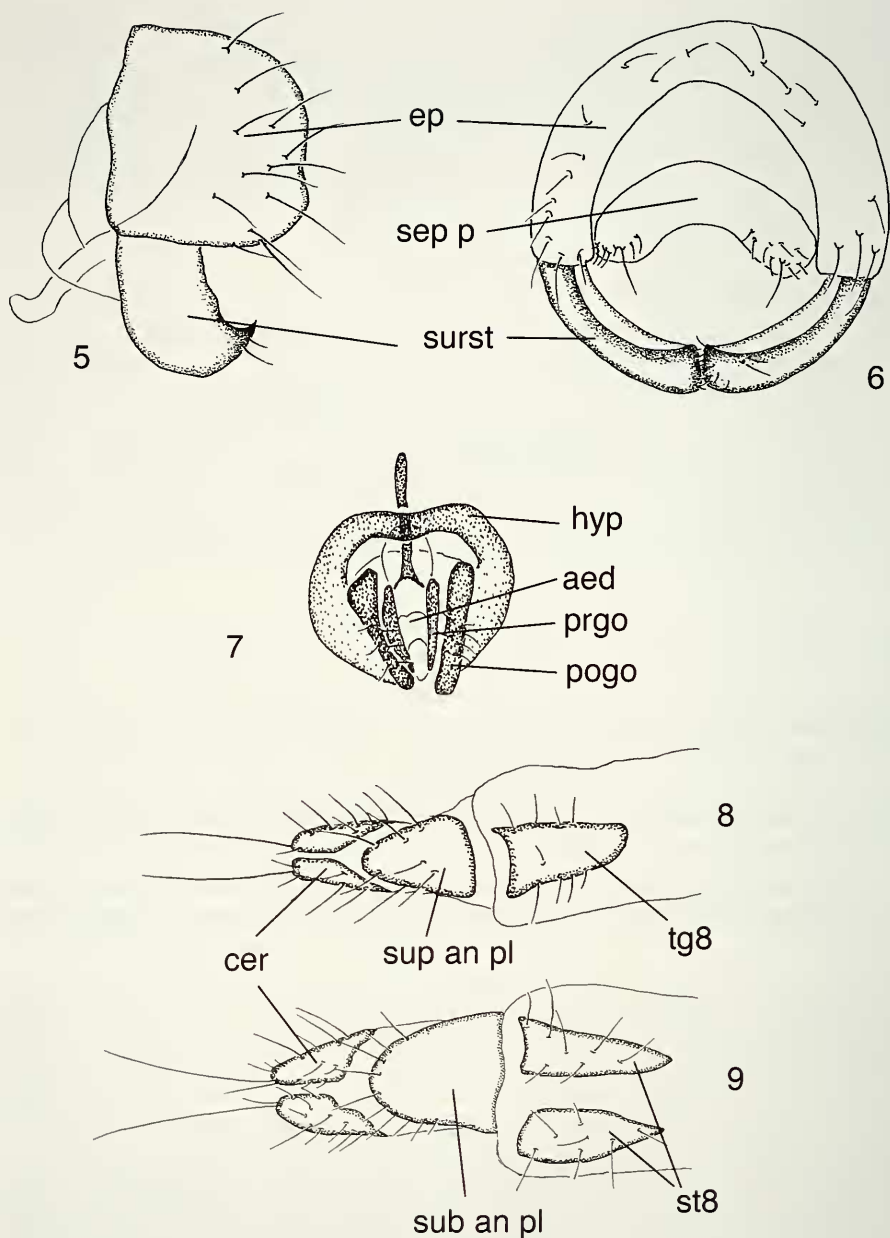
Legs: Almost bare, setulae short, yellow whitish, thin; hind tibia in both sexes posteriorly along the length of the black ring in middle with a narrow, elongated tibial organ.

Wing: Shape as Fig. 4 and Plate A1; hyaline; veins yellow; anal lobe well developed; length and shape of veins as typical for the genus with the short R2+3 which is about as long as the distance between R4+5 and M1+2 along Costa; the latter reaching M1+2.

Abdomen: Oval to elongate depending on drying, almost bare, covered with short, thin, yellow whitish fine setulae which are slightly longer at posterior margin of tergites.

Male terminalia (Figs 5-7): Epandrium (Fig. 6) a semicircle, sparsely setulose; subepandrial plate with few setulae laterally; surstylus (Figs 5-6) shovel like, in caudal view strongly converging, in lateral view pointed at apex, almost bare except for apex; hypandrium (Fig. 7) open distally, forming a bridge basally, bare; postgonite with few setulae; pregonite bare, forming a sheath around the aedeagus; the latter soft.

Female terminalia (Figs 8-9): Ovipositor soft, retractable in preabdomen; tergite 8 an unpaired sclerite, sparsely setulose; sternite 8 paired, sparsely setulose; supra-anal plate triangular, pointed apically; border of subanal plate evenly setulose, setulae arranged in one row; cerci with a long apical seta.



FIGS 5-9

Siphunculina ismayi sp. n. (5) Epandrium and surstylus, lateral view (male paratype). (6) Epandrium, subepandrial plate and surstylus, caudal view (male paratype). (7) Phallic complex, ventral view (male paratype). (8) Apex of ovipositor, dorsal view (female paratype). (9) Same, ventral view (female paratype). Abbreviations: aed = aedeagus; cer = cerci; ep = epandrium; hyp = hypandrium; pogo = postgonite; prgo = pregonite; st8 = sternite 8; sep p = subepandrial plate; sub an pl = subanal plate; sup an pl = supra-anal plate; surst = surstylus; tg 8 = tergite 8.



A2



A4



A1



A3

PLATE A

Siphunculina ismayi sp. n. male paratype. (1) Habitus, lateral view. (2) Head, frontal view. (3) Head, dorsal view. (4) Mesonotum and scutellum, dorsal view.

REMARKS: Currently, three species of *Siphunculina* are known from Northern and Central Europe which differ clearly in the characters given in the key (see below) and the diagnosis. The new species is very peculiar with the presence of the white, stubby, lanceolate setulae on the grey microtrichose mesonotum and scutellum in combination with the short, mainly grey microtrichose ocellar triangle and may belong to a group of Oriental species with the same type of setulae on head and thorax. It differs from *S. nidicola* Nartshuk and *S. aenea* (Macquart) in the structure of the male terminalia (Andersson, 1977; Nartshuk, 1971; Kanmyia, 1983).

BIOLOGY: The specimens from Corsier were collected dead on the window sill of a garden place which was treated partly with insecticides. On the other hand, the whereabouts of the finding of the specimens from Grono cannot be reconstructed. They were probably swept from vegetation underneath some trees. Both localities are characterized by a warm, sunny climate.

DISTRIBUTION: So far only known from two localities in Switzerland, one south of the Alps (Grono) and one north of the Alps, in the canton Geneva.

SHORT KEY TO WESTERN PALAEARCTIC SPECIES OF *SIPHUNCULINA* RONDANI:

- 1a Ocellar triangle not reaching anterior margin of frons 2
- 1b Ocellar triangle reaching anterior margin of frons 3
- 2a Ocellar triangle mostly matt, microtrichose *Siphunculina ismayi* sp. n.
- 2b Ocellar triangle shining black (Eastern part of Central Europe to Mongolia) *Siphunculina nidicola* Nartshuk, 1971
- 3a Mesonotum entirely shining black 4
- 3b Mesonotum dull black, microtrichose, or only setulae on small shining black spots 5
- 4a Fronto-orbital plates uniformly black shining; gena narrow, as in *S. ismayi* (Fig. 1) (Palearctic Region) *Siphunculina aenea* (Macquart, 1835)
- 4b Fronto-orbital plates between the fronto-orbital setae with grey-microtrichose spots; gena much wider, almost as wide as diameter of post-pedicel (South Europe, North Africa, Afrotropical and Oriental Regions) *Siphunculina ornatifrons* (Loew, 1858)
- 5a Frons and mesonotum uniformly black (Western Palearctic Region) *Siphunculina quinquangula* (Loew, 1873)
- 5b Frons and mesonotum with setae and setulae inserted on dusted spots (Madeira, Asia, Afrotropical and Oriental Regions) *Siphunculina striolata* (Wiedemann, 1830)

FURTHER MATERIAL STUDIED

Siphunculina aenea (Macquart, 1835)

MATERIAL STUDIED: 1 ♀, CH: GE, Chancy, bord du Rhône, 350 m, 28.VII.2002, leg. B. Merz (MHNG). – 7 ♂, 15 ♀, GE, Corsier-Port, vitre véranda, VI.2003–VII.2006, leg. C. Besuchet (MHNG). – 1 ♀, GL, Schwanden, 600 m, 20.VI.1993, Merz & Eggenberger (MHNG). – 1 ♀, ZH, Zürich-Waldgarten, 450 m, 27.VII.1996, leg. B. Merz (MHNG). – 1 ♀, ZH, Zürich-Zürichberg, 600 m, 17.IX.1992, leg. B. Merz (MHNG).

Siphunculina ornatifrons (Loew, 1858)

MATERIAL STUDIED: 1 ♀, ISRAEL: Antipatris, 8.VI.1996, leg. B. Merz (MHNG). – 1 ♂, 1 ♀, Herzliyya, 8.VI.1996, Merz & Freidberg (MHNG).

Speccafrons Sabrosky, 1980: 424.

TYPE SPECIES: *Oscinella mallochi* Sabrosky, 1938 (original designation).

This small genus was proposed rather recently by Sabrosky (1980) for a Nearctic species which was placed in *Oscinella* but differs in the structure of the male terminalia with the expanded surstylus, the speckled frons and the development of numerous soft setulae on the scutellum. Currently, five species are placed in *Speccafrons*, three of which are known in the Palaearctic Region. Two species were described from the Western Palaearctic Region (Nartshuk, 2007). The larvae of all species with known biology were reared from egg masses of spiders where they are apparently carnivorous (Ismay & Nartshuk, 2000).

Speccafrons genavensis sp. n.

Figs 10-20 and Plate B1-4

MATERIAL STUDIED: Holotype ♂: "Helv., GE, 510 m, Bernex-Signal, 20.VI.2008, leg. B. Merz" (MHNG). – Paratypes: 1 ♀, "CH: GE, Corsier-Port, vitre véranda, 27.-29.VI.2003, C. Besuchet" (MHNG). – 1 ♀, same data as before, but 16.-31.VIII.2003 (MHNG). – 2 ♀, same data as before, but 1.-31.VI.2004 (MHNG). – 2 ♀, same data as before, but 1.-31.VII.2005 (MHNG). – 2 ♀, same data, but 1.-31.VII.2006 (MHNG). The holotype is double mounted and pinned on a minuten pin on a block of plastozote. It is in excellent condition. The abdomen was removed and it is stored in glycerol in a glass vial attached to the main pin.

ETYMOLOGY: The species is named after the type locality.

DIAGNOSIS: Fitting the concept of the genus as described by Sabrosky (1980) with the speckled frons, setulose compound eye, the mesonotum densely setulose but the setulae not arranged in lines, the numerous long setulae along the margin of the scutellum and the large, globose surstylus. It differs from other Western Palaearctic species of the genus by the bicoloured gena (dorsal half orange, ventral half blackish), the shining dorsum of the mesonotum and the fore coxa which have at least a large black stripe (male) or are almost entirely black (female).

DESCRIPTION

Wing length: Male (n=1) 1.87 mm (holotype); female (n=8) 1.63-1.95 mm.

Colouration: Head matt, bicoloured: frons yellow brown to brown, grey microtrichose, but setae and setulae inserted on tiny shining spots giving it a speckled appearance; slightly paler just dorsally of lunule; ocellar triangle shining black, but to different degree silvery microtrichose (in male thinly microtrichose only on three small areas around ocelli; female stronger microtrichose, in one specimen only anterior of anterior ocellus with a shining spot); face brown to black, slightly darker on keel; occiput black; gena in dorsal half orange, in ventral half dark brown to black; antenna yellow but anterodorsal half of postpedicel blackish; arista orange at base, flagellum darker; clypeus black, partly grey microtrichose; palpus yellow, labellae darker. Thorax black, strongly shining on dorsal surface of mesonotum and most parts of pleura; thinly grey microtrichose laterally of presutural seta, a stripe on mesonotum just anterior scu-

tellum, on scutellum, on posterodorsal half of anepisternum and anterodorsal half of anepimeron; prosternum mostly yellow to brown. Legs mostly black, dull, but all knees, tip of all tibiae and all tarsi brown; fore coxa in male mostly brown, in female mostly black. Halter yellow. Abdomen black, tergites mostly grey microtrichose, only sides to various degrees shining.

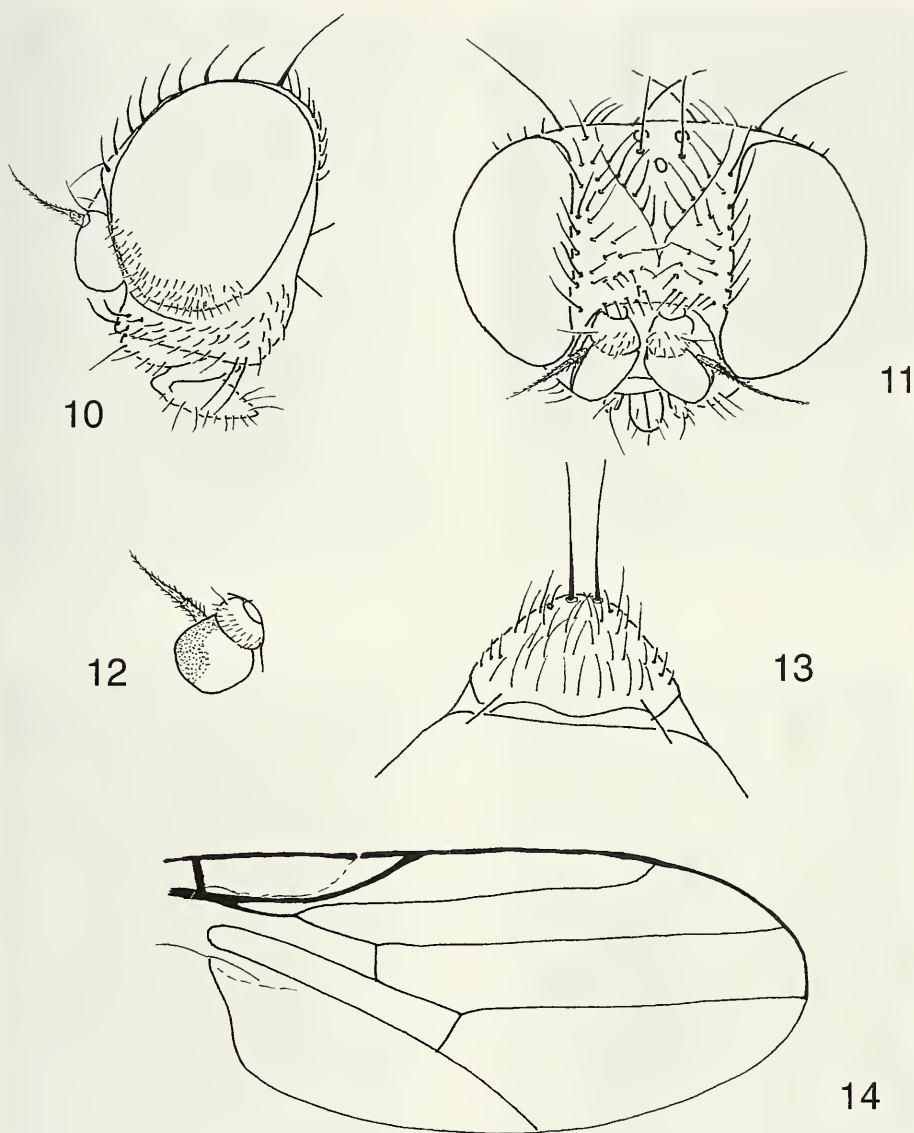
Head (Figs 10-12, plate B1-3): In profile about 1.25 times as high as long; gena about one sixth as high as compound eye, about two thirds as wide as postpedical and at least 1.5 times as wide as diameter of fore tibia; vibrissal angle not projecting anteriorly to eye; compound eye 1.2 times as high as wide, densely covered with pale, conspicuous setulae; frons almost square, about one third wider than compound eye, covered with numerous inclinate, black, thin, acuminate setulae; ocellar triangle about two thirds as long as frons, sharply pointed apically; face strongly concave, dorsally with distinct keel between antennal bases, fading ventrally; occiput and posterior part of head almost straight; antenna (Fig. 12) with small scape and pedicel, the latter setulose; postpedicel spherical, about as long as wide, indistinctly pointed dorso-apically; arista short, covered with short, but distinct setulae; mouthparts not projecting, palpus and labellae reaching anterior margin of oral cavity; labellae short spatulate. Chaetotaxy: all setae and setulae dark brown to black, thin, acuminate; 6-8 reclinate fronto-orbital setae in one line; 1 upright ocellar seta; ocellar triangle along border with a row of about 6 conspicuous setae; 1 inclinate postocellar seta; 1 eclinate, long lateral vertical seta; medial vertical seta not differentiated; a row of tiny postocular setae; gena with 1-3 stronger vibrissal setae and about 3 irregular rows of genal setae in ventral half; dorsal half of gena bare.

Thorax (Fig. 13, plate B4): Robust, mesonotum about as wide as long, densely covered with conspicuous, fine, whitish, acuminate setulae which are not arranged in rows; setulae on postpronotum slightly thicker, black; notopleuron without setulae; scutellum semicircular, about two thirds as long as wide at base, on disc with long, whitish, thin setulae, and with black setulae along margin; pleura bare except for some setulae on posterodorsal half of katepisternum; postscutellum shining. Chaetotaxy: all setae dark brown to black, usually longer and thicker than surrounding setulae; 1 postpronotal seta; 1+2 notopleural setae; 1 dorsocentral seta close to scutellum; 1 supra-alar seta; 1 much shorter postalar seta; 1 (pair of) parallel-sided apical scutellar seta which is not inserted on a tubercle and which is distinctly longer than length of scutellum; basal scutellar seta not differentiated; 1 weak, upright, short proepimeral seta just dorsally of fore coxa.

Legs: Densely covered with pale setulae; fore femur thicker than other femora; hind tibia slightly banana-shaped, curved, posteriorly with a distinct oval tibial organ.

Wing: Shape as in Fig. 14, plates B1 and B4; hyaline; veins yellow, all conspicuous and rather thick; anal lobe well developed; venation as typical for the genus; veins more or less parallel-sided, only R2+3 upturned to Costa at tip; Costa reaching M1+2; section between R1 and R2+3 1.5 to twice as long as section between R2+3 and R4+5; cross-vein R-M about at level of tip of R1.

Abdomen: Compact, somewhat oval; tergites covered with numerous soft, short, light brownish setulae which are distinctly shorter than length of corresponding tergite.



FIGS 10-14

Speccafrons genavensis sp. n. male holotype. (10) Head, lateral view. (11) Head, dorsal view; (12) Antenna in maximal extension (drawn in situ). (13) Scutellum, dorsal view (drawn in situ). (14) Wing (drawn in situ).

Male terminalia (Figs 15-18): Sternite 4 oval, setulose; sternite 5 shorter than sternite 4, wider at base, apically distinctly concave, setulose on basal two thirds, setulae inserted on stronger sclerotization (Fig. 15); epandrium in caudal view a semicircle, setulose (Fig. 17); in dorsal view divided into two symmetrical sclerites which are



PLATE B

Speccafrons genavensis sp. n. male holotype. (1) Habitus, lateral view. (2) Head, frontal view; (3) Head, dorsal view. (4) Mesonotum and scutellum, dorsal view.

united over a narrow, darker, stronger sclerotized bridge; subepandrial plate like a pair of very narrowly connected glasses, apically with some setulae; surstylus very large, globose, elongate oval in caudal view, with a medial tooth, only sparsely setulose (Figs 16-17) medially, weakly articulating with epandrium; hypandrium (Fig. 18) closed posteriorly by a narrow bridge; anteriorly with a large, wide bridge; postgonite rounded apically, with two setulae and two pits; phallapodeme reaching base of hypandrium, posteriorly forming an open circle in which the aedeagus is embedded; aedeagus a small, sclerotized tube.

Female terminalia (Figs 19-20): Ovipositor retractable, when fully extended longer than preabdomen; tergite 8 a single sclerotized plate, with two setulae; sternite 8 divided into two sclerotized plates which are pointed apically and sparsely setulose; supra-anal plate rounded distally, sparsely setulose on surface; subanal plate similar; cerci close together, distally truncate, setulose along margin.

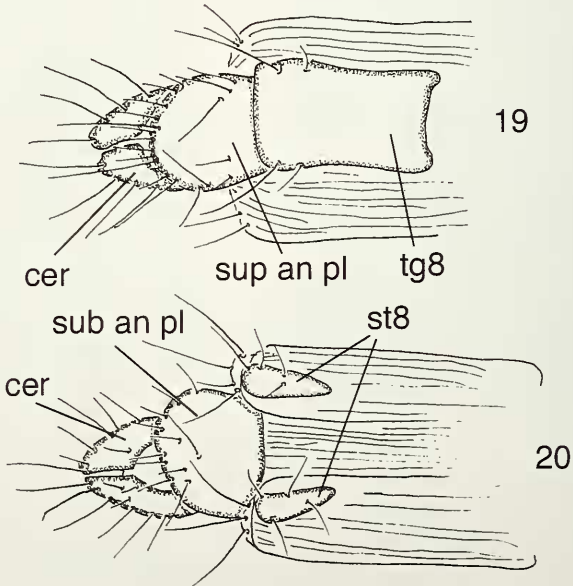
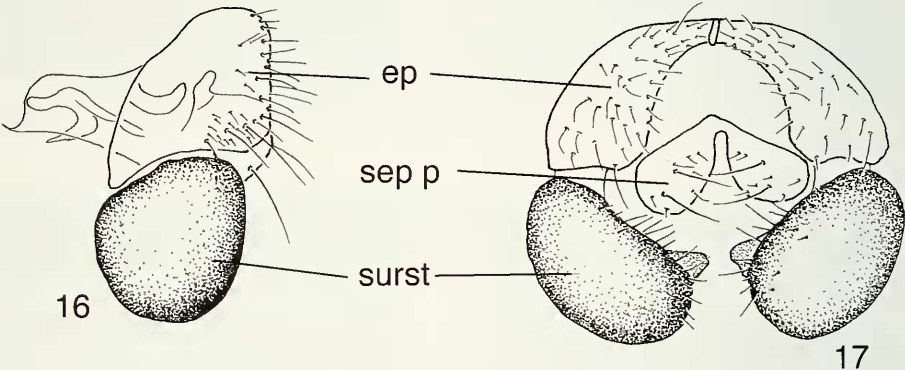
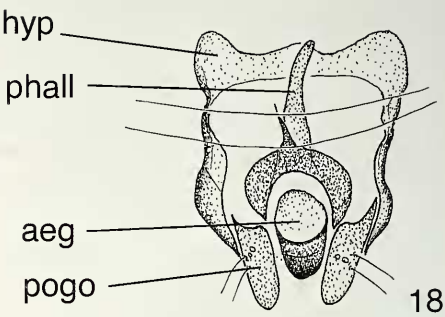
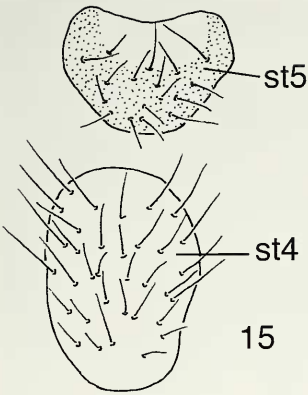
REMARKS: The new species resembles externally *S. cypria* in most characters. Differences are provided in the key (below), in details of male terminalia and in their distribution. The other European species, *S. halophila*, is morphologically very different (especially with a microtrichose, matt mesonotum, see Duda, 1933), and the surstylus is less expanded than in the new species (compare Fig. 7 in Nartshuk, 1990, with Fig. 17).

BIOLOGY: The holotype was swept in a public park next to the highest point of the canton Geneva under some trees which are forming an open forest. The other specimens from Corsier were collected at the same place as those of *Siphunculina ismayi* sp. n.

DISTRIBUTION: Only known from two localities in the canton Geneva (Switzerland).

KEY TO WESTERN PALAEARCTIC SPECIES OF *SPECCAFRONS* SABROSKY:

- 1a Mesonotum matt, black, thinly grey microtrichose, but setae and setulae on shining, small spots (gena over 1.5 times as wide as diameter of fore tibia) *Speccafrons halophila* (Duda, 1933)
- 1b Mesonotum shining black dorsally, but thinly grey microtrichose laterally of presutural seta and along its posterior margin; width of gena variable 2
- 2a Darker species: anterior coxa in male yellow with a black stripe on inner side (male) or almost entirely black (female); all setae on head and thorax dark brown to black; gena bicoloured with yellow dorsal half and dark brown ventral half, over 1.5 times as wide as diameter of fore tibia *Speccafrons genavensis* sp. n.
- 2b Paler species: fore coxa yellow to pale brown, with indistinct infuscation on inner side in male or entirely yellow (female); setae on head and thorax yellow to yellow brown; gena uniformly yellow; gena about as wide as diameter of fore tibia *Speccafrons cypria* Nartshuk, 1990



FURTHER MATERIAL STUDIED

Speccafrons cypria Nartshuk, 1990

MATERIAL STUDIED: 1 ♂, CYPRUS: Lemasos, Pegasus beach hotel, 34.42N/33.06E, garden, beach, 0 m, 29.IV.2002, St. 29, leg. Merz, Deeming, Ebejer & Gatt (MHNG). – 1 ♀, ISRAEL: Panyas, 29.V.2000, leg. B. Merz (MHNG).

Speccafrons halophila (Duda, 1933)

MATERIAL STUDIED: 1 ♂, CH: GE, Chancy, bord du Rhône, 350 m, 28.VII.2002, leg. B. Merz (MHNG). – 2 ♀, VS, Morgins, La Chaux-Culet, 1700-1900 m, 21.VI.2003, leg. B. Merz (MHNG).

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REFERENCES

- ANDERSSON, H. 1977. Taxonomic and phylogenetic studies on Chloropidae (Diptera) with special reference to Old World genera. *Entomologica Scandinavica, Supplementum* 8: 1-200.
- DELY-DRASKOVITS, A. 1998. 95. Chloropidae (pp. 306-310). In: MERZ, B., BÄCHLI, G., HAENNI, J.-P. & GONSETH, Y. (eds). *Diptera - Checklist. Fauna Helvetica* 1: 1-369.
- DELY-DRASKOVITS, A., BÄCHLI, G. & MERZ, B. 1993. Zur Fauna der Chloropidae (Diptera) der Schweiz. *Mitteilungen der Entomologischen Gesellschaft Basel* 43: 69-84.
- DUDA, O. 1932-1933. 61. Chloropidae. In: LINDNER, E. (ed.). *Die Fliegen der Palaearktischen Region*. Volume 6(1). *E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart*, 248 pp. & 3 plates.
- FERRAR, P. 1987. A Guide to the Breeding Habits and Immature Stages of Diptera Cyclorrhapha. *Entomonograph* 8, Part I: text: 1-478.
- GREPPIN, H., DEGLI AGOSTI, R. & PRICEPUTU, A. M. 2007. Environnement et développement durable en Suisse: confédération, cantons et zones métropolitaines. *Archives des Sciences* 60(1): 13-32.
- ISMAY, J. W. & NARTSHUK, E. P. 2000. A. 11. Family Chloropidae (pp. 387-429). In: PAPP, L. & DARVAS, B. (eds). *Contributions to a Manual of Palaearctic Diptera*. Appendix Volume. *Science Herald, Budapest*, 604 pp.

FIGS 15-20

Speccafrons genavensis sp. n. (15) Sternites 4 and 5 (male holotype). (16) Epandrium and surstylus, lateral view (male holotype). (17) Epandrium, subepandrial plate and surstylus, caudal view (male holotype). (18) Phallic complex, ventral view (male holotype). (19) Apex of ovipositor, dorsal view (female paratype). (20) Same, ventral view (female paratype). Abbreviations: aed = aedeagus; cer = cerci; ep = epandrium; hyp = hypandrium; phall = phall-apodeme; pogo = postgonite; st8 = sternite 8; sep p = subepandrial plate; sub an pl = subanal plate; sup an pl = supra-anal plate; surst = surstylus; tg 8 = tergite 8.

- KANMYIA, K. 1983. A Systematic Study of the Japanese Chloropidae (Diptera). *Memoirs of the Entomological Society of Washington* 11: 1-370.
- KANMYIA, K. 1989. Study on the eye-flies, *Siphunculina* Rondani from the Oriental Region and Far East (Diptera, Chloropidae). *Japanese Journal of Sanitary Zoology* 40 (Supplement): 65-86.
- KANMYIA, K. 1994. Studies on the eye-flies *Siphunculina* Rondani from Nepal (Diptera: Chloropidae). *Japanese Journal of Sanitary Zoology* 45 (Supplement): 55-69.
- MERZ, B. & HAENNI, J.-P. 2000. 1.1. Morphology and terminology of adult Diptera (other than terminalia) (pp. 21-51). In: PAPP, L. & DARVAS, B. (eds). Contributions to a Manual of Palaearctic Diptera. Volume 1. *Science Herald, Budapest*, 978 pp.
- MERZ, B., BÄCHLI, G. & HAENNI, J.-P. 2002. Erster Nachtrag zur Checkliste der Diptera der Schweiz. *Mitteilungen der Entomologischen Gesellschaft Basel* 51(3-4) (2001): 110-140.
- MERZ, B., BÄCHLI, G. & HAENNI, J.-P. 2007. Zweiter Nachtrag zur Checkliste der Diptera der Schweiz. *Mitteilungen der Entomologischen Gesellschaft Basel* 56 (4) (2006): 135-165.
- MERZ, B., BÄCHLI, G., HAENNI, J.-P. & GONSETH, Y. (eds). 1998. Diptera, Checklist. *Fauna Helvetica* 1: 1-369.
- MERZ, B., ISMAY, J. W., SCHULTEN, B. & DELY-DRASKOVITS, A. 2005. Neue und selten gesammelte Chloropidae (Diptera) der Schweiz. *Mitteilungen der Entomologischen Gesellschaft Basel* 55(3): 74-87.
- NARTSHUK, E. P. 1971. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 252. Chloropidae, Part 1. Oscinellinae (Diptera). *Annales Historico-Naturalis Musei Nationalis Hungarici, Pars Zoologica* 63: 275-299.
- NARTSHUK, E. P. 1990. Chloropid flies (Diptera, Chloropidae) of Cyprus. *Entomologica Fennica* 1: 227-232.
- NARTSHUK, E. P. 2005. Grassflies (Diptera, Chloropidae) of South Korea, with a Review of Species of the Genus *Centorisoma* Becker. *Entomological Review* 85(5): 555-568.
- NARTSHUK, E. P. 2007. Fauna Europaea: Chloropidae. In: PAPE, T. (ed.). Fauna Europaea: Diptera, Brachycera. Version 1.3. <http://www.faunaeur.org> (accessed 8 August 2008).
- SABROSKY, C. W. 1980. New genera and new combinations in Nearctic Chloropidae (Diptera). *Proceedings of the entomological Society of Washington* 82(3): 412-429.
- STUCKENBERG, B. R. 1999. Antennal evolution in the Brachycera (Diptera), with a reassessment of terminology relating to the flagellum. *Studia Dipterologica* 6(1): 33-48.